

Tone King "Sky King"

User's Manual

1.4 8/25/2015



Tone King Amplifiers
A division of Premier Builders Guild LLC
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Note from the Builder

Thank you for choosing Tone King's "Sky King" guitar amplifier. The Sky King is the first handwired amplifier that we've built in 20 years. It was inspired by the desire to dig deeper into the realm of genuine vintage guitar tones. Whether you're chasing the tone of Steve Cropper, Joe Maphis, Roy Buchanan, or any player that defines an iconic vintage American guitar sound, the Sky King will get you there. In spite of its' rich set of features, the Sky King is quite simple to operate, and full of great tones - you won't need to do a lot of knob twiddling to get a great tone.

The Sky King is handbuilt by the fine team of builders at Premier Builders Guild's Rohnert Park, CA facility – the same crew that builds the Two Rock line of fine guitar amplifiers. This crew works to the highest standards of quality, and every phase of construction is subject to strict scrutiny and verification to ensure that every Tone King amplifier is built exactly the way I build them myself.

I've composed this User's Manual as a means of describing the features and operation of the Sky King. If you have any questions which are not covered here, please feel free to contact me personally at mail@toneking.com.

Best Regards,

Mark Bartel

Tone King Amplifiers, a division of Premier Builders Guild LLC

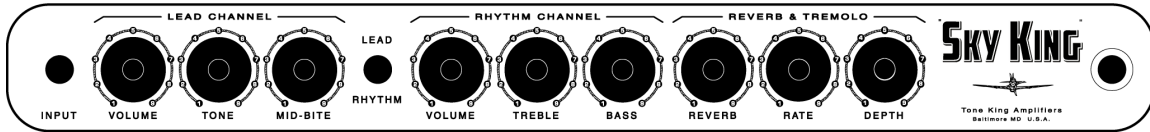
Safety Instructions (Important !)

1. Please read these instructions, and keep them for reference.
2. Please follow all instructions described here.
3. Do not use this apparatus near water.
4. Clean only with a dry cloth.
5. Do not block any ventilation openings.
6. Do not operate near any heat sources such as radiators or heat registers.
7. Protect the power cord from being walked on or pinched, particularly at the plugs and at the point where they exit from the apparatus.
8. Only use attachments/accessories specified by the manufacturer.
9. Unplug this apparatus during lightning storms or when unused for long periods of time.
10. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way. For example, if the power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
11. CAUTION: To disconnect the unit completely from the MAINS, unplug the unit. Turning the power switch off does not disconnect the unit completely from the MAINS.

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1. Front Panel Controls



Two Preamp Channels – Lead and Rhythm

The Sky King has two separate preamplifier channels, each with its own unique voicing. You can switch between the channels with either the “Lead/Rhythm” switch (on the front panel) or with the “Channel” switch on the footswitch. When using the footswitch, you should set the front panel switch to the “Rhythm” position. You’ll notice that the LED on the footswitch indicates the channel selected. When the LED is lit, the Lead channel is selected. When the LED is not lit, the Rhythm channel is selected.

Rhythm Channel

The Rhythm channel includes controls for Volume, Treble, and Bass. This channel is designed to deliver a “vintage 1960’s clean tone” – the type of tone you might associate with a well known brand of amplifier made in California during that period. This tone is characterized by a crisp, present top end, a slightly “scooped” midrange, and a full bottom end. As will be noted later, this general type of tone can take on two distinct flavors, depending on the setting of the “Mode” switch on the back panel. Pentode mode will give you a sound and response that you would expect from a genuine vintage amp of this type, with a crisp and present top end, and fast attack, and lots of clarity and transparency. Ultralinear mode recalls a sound from an earlier period of vintage amps. In this mode, you will get a sound with a softer attack and increased depth and dimension, and a nice compliant “feel”. The top end will become rounder, smoother, and silkier. One other thing to note is that the overall gain of the amplifier is reduced significantly in Ultralinear mode, so you will need to compensate by adjusting the Volume control.

The Bass and Treble controls act much like they would on a genuine vintage amp of this type. The Sky King is a bit unique in that you’ll find a wide range of usable tones at just about any setting of the Bass and Treble controls, but here are a few sample settings to get you started:

1960s Clean Tone

Volume	Treble	Bass	Mode (back panel)
3	4	6	Pentode

Old-School Clean Tone

Volume	Treble	Bass	Mode (back panel)
5	5	6	Ultralinear

Lead Channel

The Lead channel starts out with a Tweed style preamp, which drives a proprietary tone-shaping circuit built around the Mid-Bite control, a unique Tone King feature. This proprietary circuit transforms the basic tweed tone to more of a crunchy rock tone as you turn up the mid-bite control. This is accomplished by simultaneously tightening up the bass, rolling off the very high frequencies, increasing the gain, and developing a pronounced upper midrange peak. The Mid-Bite control is the key to dialing in your own particular sound on the lead channel, so you may want to experiment and observe its effect as you rotate it from 1 to 9.

The setting of the “Mode” switch on the back panel will have a big effect on the tone and feel of the amp in the Lead channel. In Pentode mode, the amp will be brighter and edgier, with a tighter, more percussive response. In Ultralinear mode, the overdrive will be thick and syrupy, with a more elastic feel. One other thing to note is that the overall gain of the amplifier is reduced significantly in Ultralinear mode, so you will need to compensate by adjusting the Volume control.

When you are using the attenuator to reduce the volume of the lead channel, you’ll notice that the speaker acts differently at low volume than it does at high volume. At low volume, you don’t get the benefit of speaker breakup and compression to smooth and round out the distortion tone. A good way to compensate for this is to use Ultralinear mode when attenuating to very low volume.

Here are a few sample settings which demonstrate just a few of the tones available with the Lead channel:

Old Style Tweed Clean

Mode	Volume	Tone	Mid-Bite
Ultralinear	4	5	1

Cranked Tweed

Mode	Volume	Tone	Mid-Bite
Pentode	5	4	1.5

Rock Grind

Mode	Volume	Tone	Mid-Bite
Pentode	7	5	6

Thick, Chunky Mids

Mode	Volume	Tone	Mid-Bite
Ultralinear	7	5	9

Reverb

The Sky King includes a built in 2-spring, tube-driven reverb circuit. Reverb is applied to both the Rhythm and Lead channels. In order to compensate for the higher gain of the Lead channel, the reverb drive is reduced slightly on the Lead channel. This reduction helps to match the reverb level when switching between preamp channels, when the Lead channel is being driven hard and the Rhythm channel is set for a clean tone.

The Reverb level is controlled by the front panel Reverb control, which adjusts the amount of the reverb signal which is mixed into the signal path.

Tremolo (Rate & Depth)

The Sky King's tremolo circuit is a modified form of the old-fashioned "bias modulation" tremolo circuit. This circuit achieves the tremolo effect by varying the bias of the output tubes. This type of tremolo was used in all Tone King amps going back to 1993. However, the Sky King uses a modified form of this circuit which virtually eliminates the "thumping" and other sonic effects that are typical for this type of effect.

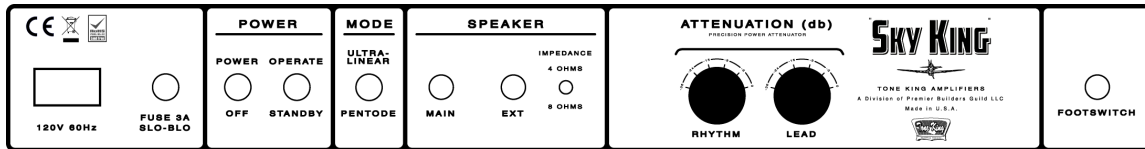
This type of tremolo circuit gives you a nicely rounded effect, but it is quite subtle when compared to an opto-coupler tremolo (as would be found in, for example, a Fender Twin Reverb).

The "Depth" control varies the intensity of the modulation effect, and the "Rate" knob controls the speed of the effect.

If the footswitch is not being used, then the tremolo circuit is active all the time, so you will need to turn the "Depth" knob all the way down if you do not wish to use tremolo.

When the footswitch is plugged in, you can turn the tremolo on and off with the footswitch. An LED shows the status of the effect (LED on = tremolo on)

2. Back Panel Controls



AC Power

Always use a grounded AC cord, and make sure that a proper ground connection is supplied to the amp. Never attempt to lift or defeat the ground connection to the amp.

Fuse

A standard 3A slo-blo fuse (style 3AG) should be used.

Power Switch, Standby Switch

When powering up the amp, you should start with both the Power and Standby switches in the "off" position.

First, turn on the Power switch. This will apply power only to the tube filaments and the low-voltage circuitry.

After turning on the Power switch, allow the tubes to warm up for about 1 minute, then turn on the Standby switch.

The power-down sequence is not as important as the power-up sequence. When turning the amp off, you may turn Power off before Standby, or turn Standby off before Power, or turn them both off at the same time.

Footswitch

Connect the footswitch to the amp with the supplied cable, or with any standard ¼" TRS (Stereo) -to- ¼" TRS (Stereo) cable.

The footswitch allows you to control both the preamp channel selection and the tremolo on/off. LEDs indicate the current switching status, as follows:

Channel switch: LED on = Lead channel

Tremolo switch: LED on = Tremolo on

When using the footswitch, make sure to set the front panel Channel switch to the Rhythm position.

Speaker Jacks, Impedance Switch

When only one speaker is being used (e.g. the internal speaker), it must be plugged into the “Main” speaker jack, and the Impedance switch should be set to match the impedance of that speaker.

If you are using an extension speaker, but NOT using the internal speaker, then you should plug the extension speaker into the Main speaker jack, and set the Impedance switch to match the impedance of the external speaker.

The Extension speaker jack may only be used if there is also a speaker plugged into the Main speaker jack. Inside the amp, the Extension speaker jack is wired in parallel with the Main speaker jack. When using an extension speaker in addition to the internal 8-ohm speaker, it is best to use an 8-ohm external speaker. Since the external speaker is wired in parallel with the internal speaker, the total combined impedance will be 4 ohms, so you would set the Impedance switch to the 4-ohm position.

If desired or necessary, you may safely mismatch the impedance by as much as doubling or halving the selected impedance. Mismatching beyond this is not recommended. For example, if the Impedance switch is set to 8 ohms, you may use a combined speaker load as low as 4 ohms or as high as 16 ohms.

Output Mode

This switch selects the operating mode of the output tubes. As described in the previous sections for the Rhythm and Lead channels, the two modes give you distinctly different feel and tone. It is important to understand and appreciate the qualities of each operating mode, and it is the key to the Sky King’s tonal versatility. Here’s a brief description of each mode:

Pentode Mode: 99% of all tube amplifiers built today and in the past have their output tubes wired in pentode mode. In this mode, the screen grid is supplied with a filtered supply voltage which is slightly lower than the plate voltage. The sound and feel of tubes operated in this mode should be quite familiar. In general, this mode will give you a sound that is crisp and present, with a fast attack and a percussive response.

Ultralinear Mode: Only a handful of popular guitar amplifiers have been built with their output tubes wired in Ultralinear mode. In this mode, the screen grids are connected to taps on the primary of the output transformer. Tubes wired this way can generate about the same level of power as Pentode mode, but will create a unique sound and response, which is similar to what you would get if they were wired in Triode mode (though in Triode mode, the output power would be reduced). It is a sound that is richer in lower order even harmonics. This is a more old-school kind of sound, with a thicker midrange and a sweeter, rounder top end. You’ll also notice that it gives the amp a softer, more elastic feel that makes it a joy to play.

A secondary effect you will notice in Ultralinear mode is that the gain of the amplifier is reduced significantly. When switching between modes, you will need to adjust the preamp volume controls to compensate.

When you switch between modes, you will hear a loud pop from the speaker. It is perfectly safe to do this, but if you prefer to avoid hearing the loud pop, you may want to switch to standby mode before changing the Mode setting.

Attenuation Controls

The Sky King contains a built-in Ironman precision attenuator with dual attenuation controls, to allow you to reduce the volume level of the amplifier while allowing its output tubes to operate at full output power, for natural power tube overdrive and distortion. This attenuator uses transformer coupling and a precision tuned reactive load to best preserve the natural tone and feel of the amp, even at very low volume. This is the same general approach used in the highly regarded Ironman standalone attenuator.

There are many different approaches that can be used to generate overdriven and distorted tones as a low volume. For example, master volume circuits, or a power reduction scheme such as London Power Scaling have both been used successfully on various amp models of other brands. However, for the more vintage sounding tones that the Sky King is designed to achieve, a good quality attenuator such as the built-in Ironman is the best way to preserve tone and feel at very low volume.

The attenuation controls determine the level of the signal sent to the speaker, but do not affect the operation of the output stage of the amplifier itself. The attenuator absorbs and dissipates any excess power generated by the output tubes that is not sent to the speaker.

The attenuator is internally connected between the amplifier output and the speaker jack – the same way an external attenuator would be connected. However, the input of the attenuator is not accessible, so you cannot use the built-in Ironman attenuator to attenuate the output of some other amplifier.

This particular variation of the Ironman is designed with two separate attenuation controls. The Ironman switches between controls as you switch channels, so you can set the output level for the Rhythm and Lead channels independently.

Notes on using the attenuator

Although the Ironman attenuator does the best possible job of reducing output power without changing the tone of the amp's circuitry, there are other variables in play at lower volume which do result in some apparent tone change. Here are a few factors that you should be aware of -

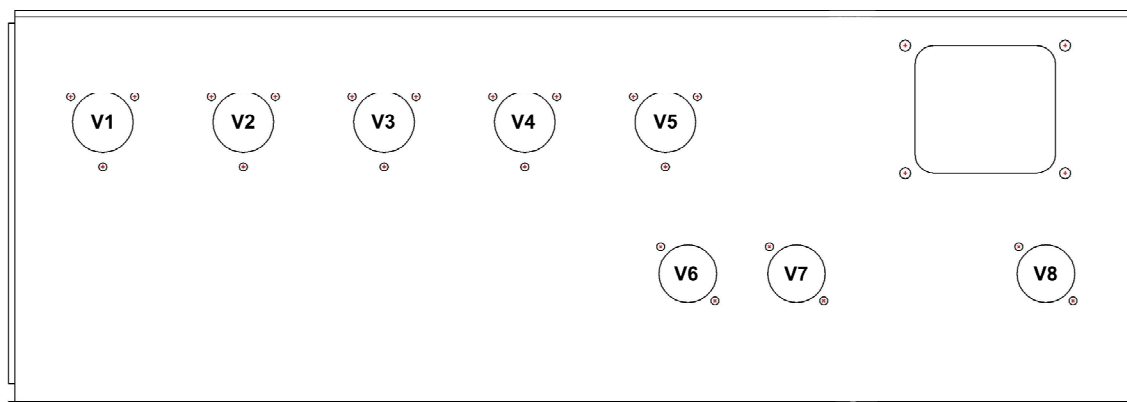
Speaker breakup and compression is a big part of the tone and feel of the amp when played at high volume. At low power settings, the speaker responds differently, and does not break up and compress as it does at high power.

The ear's natural response curve varies at different volume levels, which changes the way you perceive sounds at different volume levels. Quieter sounds tend to give the impression of having less bass content.

One way to help compensate for the above two factors is to intentionally mismatch the speaker impedance, via the impedance switch on the back panel. At low power settings, you might try switching the impedance switch to the 4-ohm position (it should normally be set to 8-ohms). Doing this will give you a fatter, thicker, slightly more elastic tone. The downside is that it also tends to roll off the high frequencies a bit as well. Another way to compensate for the above factors is to use Ultralinear mode at low volume.

At lower volume, there is a tendency to hit the guitar strings harder and play more aggressively than you would if the amp were tuned up very loud. It may take some time to get used to maintaining your playing style at reduced volume.

3. Tube Installation and Replacement



Choice of Tube Types and Brands

I currently suggest the following tube types:

No.	Type and Brand	Function
V1	TAD 12AX7A-C/Tung Sol 12AX7A	Stage 1 (Rhythm+Lead), Stage 2 (Lead)
V2	TAD 12AX7A-C/Tung Sol 12AX7A	Stage 2 (Rhythm), Stage 3 (Lead)
V3	TAD/EH 12AT7	Reverb Driver
V4	TAD 12AX7A-C/Tung Sol 12AX7A	Reverb receiver
V5	TAD 12AX7A-C/Tung Sol 12AX7A	Phase Inverter
V6-V7	TAD 6L6WGC	Output Tubes
V8	TAD/EH 5U4	Rectifier

The tube brands shown above are my own preferences. You may want to use other brands, to tailor the sound to your own tastes. Here are a few notes on the various brands available today:

12AX7 Tubes:

Both the TAD 12AX7A-C, and the Tung Sol 12AX7A are a great match for the Sky King. Both have a nice balance of detail and warmth, with the Tung Sol having perhaps a bit more transparency in the top end, and the TAD having a bit less glassiness but still a nice presence in the upper mids.

EH 12AX7s are very similar to Tung Sol 12AX7s – both are very quiet with very low microphonics and are a bit on the bright side, with an extended top end. Tung Sols seem a bit warmer than EHs.

The Svetlana 12AX7, a short-plate tube, has nearly the clarity of the 12AX7EH, and slightly more bottom end, but is a bit congested in the midrange. Years ago, I had selected this brand as the brand of choice for the Meteor/II amp, but later changed to a combination of the 12AX7EH and the 12AX7LPS.

Sovtek 12AX7LPS – this long-plate 12AX7 has a big, warm sound that comes close to a good NOS long-plate 12AX7. However, this tube can tend to be microphonic.

6L6 Tubes:

I do not recommend using some of the lower powered 6L6 variants (e.g. 5881). The TAD 6L6WGC has a nicely balanced sound, quite warm, and manages to achieve a certain depth that you can generally only find in some nice old NOS tubes. When pushed hard, it compresses quite easily, for a softer response than most. Another great candidate is the SED 6L6GC. This one manages to sound a bit more like a genuine NOS RCA 6L6CG; when compared to the TAD, it has a bit stiffer feel for a tighter overdrive and distortion, though with slightly less detail resolution and depth than the TAD.

5U4 Rectifier:

I don't recommend using a 5AR4 rectifier – a 5U4 has the appropriate voltage drop. Of the types available, I prefer either the TAD or EH.

Installing Tubes

When installing tubes, you may find it helpful to lay the amp on its face (speaker pointing toward the ground), on a table, and shine a light directly into the back of the amp, to aid in locating the position of each tube. Tubes must be installed in the correct orientation. The smaller, all-glass tubes have a blank space in the ring of pins which must line up with the blank space in the ring of tube pins in the tube socket, located on the chassis. The larger, bakelite-base tubes have a small cylinder with an indexing key in the center of the ring of tube pins, and this indexing key must match up with the corresponding slot in the socket on the chassis.

Replacing Output Tubes

The output stage of the Sky King is fully cathode biased, and no bias adjustment is necessary when changing output tubes. The design of the Sky King's output stage allows a fair amount of margin for variation in tube characteristics, so any known brand of 6L6 can be installed, and will work properly and be appropriately self-biased.

Tube Quality

Currently manufactured tubes are built in China, Russia, or the Czech Republic, and are not built to the same quality standards as tubes manufactured by the U.S. manufacturers in the “glory days” of tube manufacturing.

We musicians choose to use vacuum tubes because of their tone, but we need to accept that the tubes available to us these days can be imperfect devices, and are most certainly the least reliable component in the entire amplifier.

It would seem that the obvious solution would be to use new-old-stock tubes that were made back in the “glory days”, when tubes were properly made. However, I’ve lately been finding that much of the available stocks of such “new old stock” tubes are either gassy, noisy, or unreliable – I do believe that we’ve reached the bottom of the barrel of NOS tubes.

Tube problems generally reveal themselves as a crackling noise which can occur continuously, sporadically, in response to mechanical vibration, or in response to your playing (e.g. a crackling or other type of noise which occurs only when you hit a note).

We subject all tubes to a thorough burn-in and test procedure to ensure that they are fully up to spec and operating perfectly. However, you must be aware that the majority of tube failures occur early in their life, and may come about as a result of the jostling and jarring that an amp can receive in shipping. In spite of the exhaustive testing we perform at the shop, early-life tube problems cannot always be found in such testing. The first two months or so are the most tenuous period for any set of tubes. Most manufacturing defects will be revealed in the first two months of their life, but many are not detectable in initial testing, even after a burn-in period.

If you notice any noises, cracking, or any other odd behavior of your amplifier in this period, note that it is most likely to be the result of a defective tube, and should be debugged as such.

Premier Builders Guild LLC

Limited Warranty

Premier Builders Guild LLC
201 S. Highland Avenue, Suite 204
Pittsburgh, PA 15206

This warranty gives you specific legal rights; you may also have other rights which vary from state to state. There are no express warranties except those listed below.

Length of Warranty

This warranty shall remain in effect for five years from the date of sale of the product as shown on the original bill of sale.

What is Covered

This warranty covers all defects in material and workmanship in this product, with the following exceptions:

1. Damage or deterioration of the cabinet, or any other cosmetic damage which occurs after delivery is not covered by this warranty.
2. Damage after initial delivery resulting from accident, unreasonable use, or neglect, is not covered by this warranty.
3. Damage resulting from the performance of repairs by someone other than the Tone King Amplifier Company is not covered by this warranty.
4. Damage occurring during shipment or delivery of this product to the Tone King Amplifier Company after initial delivery of the product is not covered by this warranty.
5. Vacuum tubes are considered a user-replaceable item, as they are expected to wear out and require replacement over a reasonable period of time. Tubes are warranted to be serviceable for a period of 90 days from the date of sale.
6. The speaker(s) in this amplifier has(have) been selected for use only with this amplifier. If the speaker(s) of this amplifier is(are) connected to an amplifier other than the intended amplifier, any warranty of this speaker shall be deemed void.

What We Will Pay For

The Tone King Amplifier Company will pay for all labor and material expenses to fix or replace all items covered under this warranty. The customer will pay shipping charges to return the product to the Tone King Amplifier Company. If the necessary repairs are covered under this warranty, the Tone King Amplifier Company will pay any shipping charges required to return the product to the customer.

Limitation of Implied Warranties

All express or implied warranties of merchantability and fitness for a particular purpose are limited in duration to the length of this warranty, unless otherwise provided by state law.

Exclusion of Certain Damages

The Tone King Amplifier Company's liability is limited to the repair or replacement, at our option, of any defective product, and shall in no event include incidental or consequential damages of any kind. Some states do not allow limitations on the length of an implied warranty and/or do not allow the exclusion of incidental or consequential damages, so the above limitations and exclusions may not apply to you.

Obtaining Warranty Service

If your unit requires service, it should be returned to the Tone King Amplifier Company at the address listed above. Before returning the unit, you must contact the Tone King Amplifier Company and obtain return authorization.

CE Declaration

Premier Builders Guild, LLC
201 S. Highland Avenue, Suite 204
Pittsburgh, PA 15206
412-362-0309



DECLARATION OF CONFORMITY Report #R070212

We, Premier Builders Guild, in coordination with CES Laboratories, declare, taking this declaration under our total responsibility, that the below models are in conformity with the provisions of the following EC Directive(s) when installed in accordance with the installation instructions contained in the product documentation:

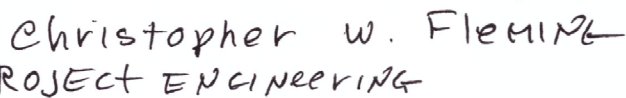
2006/95/EEC Low Voltage Directive
2004/108/EEC EMC Directive
2011/65/EEC RoHS-Directive

And that the standards and/or technical specifications have been applied to the following families of products:

Imperial	Metropolitan
Galaxy	Falcon
Sky King	Royalist
Imperial MK II	Falcon Grande

Manufacturer/Importer
Date: 8/25/2015

Signature: 

Name and Title: 

Approved By:
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President
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